

CHINATOWN PEDESTRIAN AND BICYCLE PLAN



Multimodal Transportation Project Team

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I. Executive Summary

Executive Summary



With its long history, Chinatown has become a valuable cultural and economic asset in Philadelphia. It originates from the labor discrimination laws which prohibits early Chinese immigrants from working or living in specific regions. Therefore, historic Chinatown is a product of racial violence and racist housing. It can not only serve as a home away home for immigrants, but also as a cultural tourism destination. As a key component of small business and workforce growth in a city, Chinatown is essential to the economic development of the city and country it belongs to.

The way Chinatown welcomes people in an engaging and welcoming manner is what makes it a successful and thriving community. Chinatown, in Philadelphia's Center City, is

a melting pot of Asian cultures and cuisines. Plentiful restaurants, bars, and souvenir shops, makes Chinatown an extremely suitable place to walk or bicycle leisurely. Walking and bicycling in Chinatown plays a vital role in attracting tourists and residents. It provides everyone, regardless of income, race and ethnicity, an affordable and daily physical exercise, which can reduce chronic disease and associated health care costs. Visitors and residents in Chinatown will feel safer and pleasurable when the walking and bicycle system is upgraded.

However, there are still some challenges and gaps in the current pedestrian and bicycling network in Chinatown. First, many sidewalk and bike lane markings are broken or missing. Moreover, some intersections, sidewalks and bike paths are less connective and not attractive to visitors. In addition, there are lots of limited and unutilized public spaces where walking and bicycling activities should be encouraged. Such issues mainly concentrated on 10th St and Callowhill St. Improving the existing walking and bicycling conditions can provide more direct, convenient, and safer travel routes for pedestrians and cyclists, reduce the dependency on vehicles and increase the interaction of neighborhoods. A walkable and bikeable Chinatown can help

promote Chinese traditions, culture and heritage. Simultaneously, it welcomes and incorporates fresh ideas and then encourages the fusion of increasingly diverse population.

This pedestrian and bicycle plan encompasses the entire Chinatown, stretching from Spring Garden Street to Filbert Street and from 13th to 8th Streets. With the purpose of building a safer, more convenient and attractive walking and bicycling network, four aspects of recommendations are proposed and developed in terms of physical infrastructure, built environment, maintenance and public engagement. In details, this plan intends to:

- Enhance pedestrian and bicycle infrastructure through improved maintenance and monitoring
- Strengthen the connectivity of walking and bicycling system
- Protect and reinforce Chinatown as a unique and welcoming culture hub
- Ensure enough pedestrian and bicycle activity in public spaces through encouragement and education
- Provide guidance on funding decisions and implementation



Current Conditions

Study Area

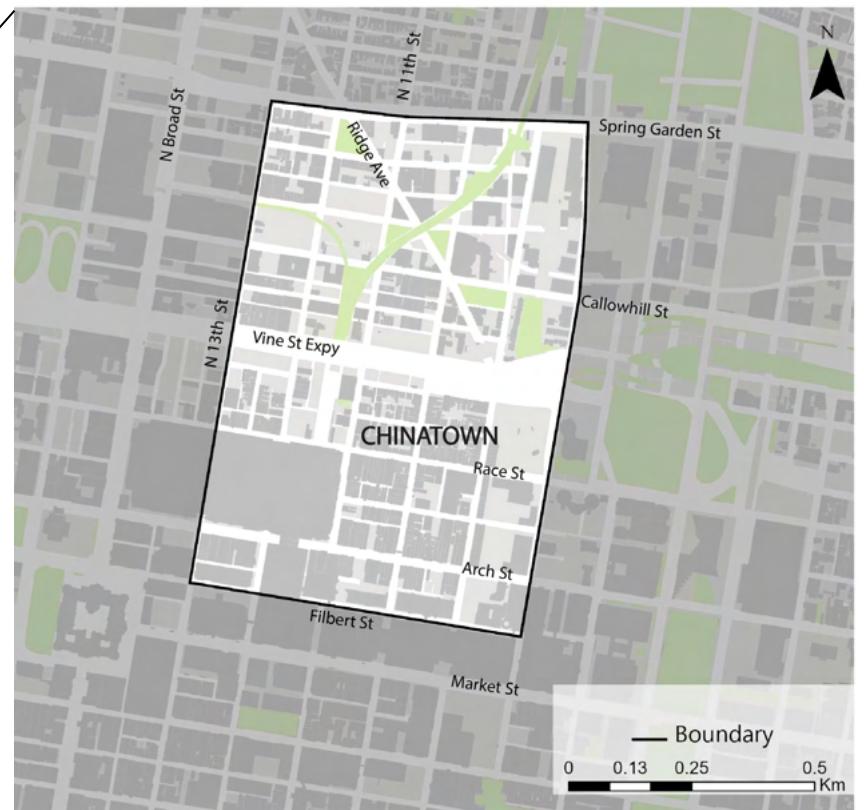


Figure: Study area

III. Current Conditions

Chinatown Pedestrian and Bicycle Plan

History & culture

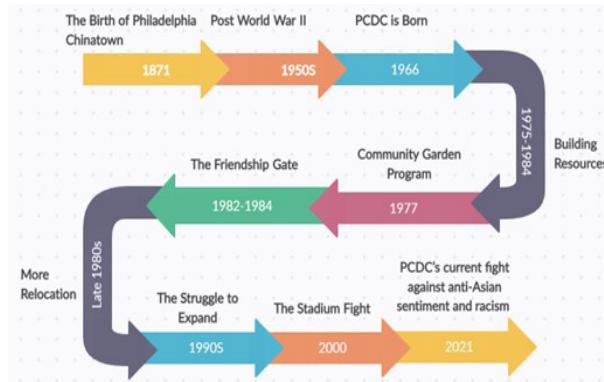


Figure: Evolution of Philadelphia Chinatown community (Source: Philadelphia Chinatown Development Corporation, 2017)

Chinatown is a neighborhood located in the Center City of Philadelphia. It stretches from Spring Garden Street to Filbert Street and from 13th to 8th Streets that consists of three census tracts: 42101000200, 42101000500 and 42101037600. The origin of Philadelphia Chinatown can be traced back to 1871 when discriminative labor laws prohibited Chinese immigrants from living and working outside of a specific region. Chinatown served as a reflection of Chinese immigrants' history, which indicated the influence of unequal policies and projects. The Philadelphia Chinatown Development Corporation (PCDC) grew from the resistance to the construction of Vine Street Expressive. For many years, lots of

urban redevelopment projects have encroached and exploited large areas of land belonging to the Chinatown community. The Pennsylvania Convention Center, Federal Detention Center, and Vine Street Expressway surrounded the core of Chinatown and have changed the footprint of the neighborhood. For a long time, PCDC worked to establish a presence at the north of Vine Street Expressway om Callowhill, northern Chinatown.



Figure: Map of current Chinatown with significant landmarks (Source: Philadelphia Chinatown Development Corporation)

Chinatown, as a distinguishable urban system, has had significant socioeconomic effects on a city. It also stands as an essential cultural communication site, attracting many visitors and promoting the fusion of cultural diversity, which assisted immigrants in adjusting to a new environment.

Traditional landmarks such as the History of Chinatown and the Friendship Gate help local Americans understand China's unique history and culture.

Demographic

Race & Population

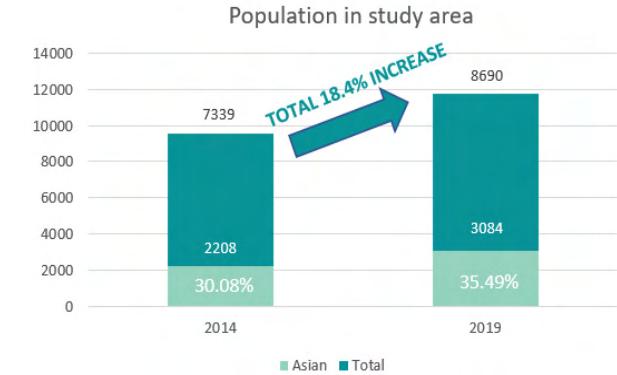


Figure: Chinatown population comparison between 2014 and 2019.(Source: American Community Survey (ACS) 5-Year Estimates, 2014, 2019)

Race Composition in 2014 vs. 2019

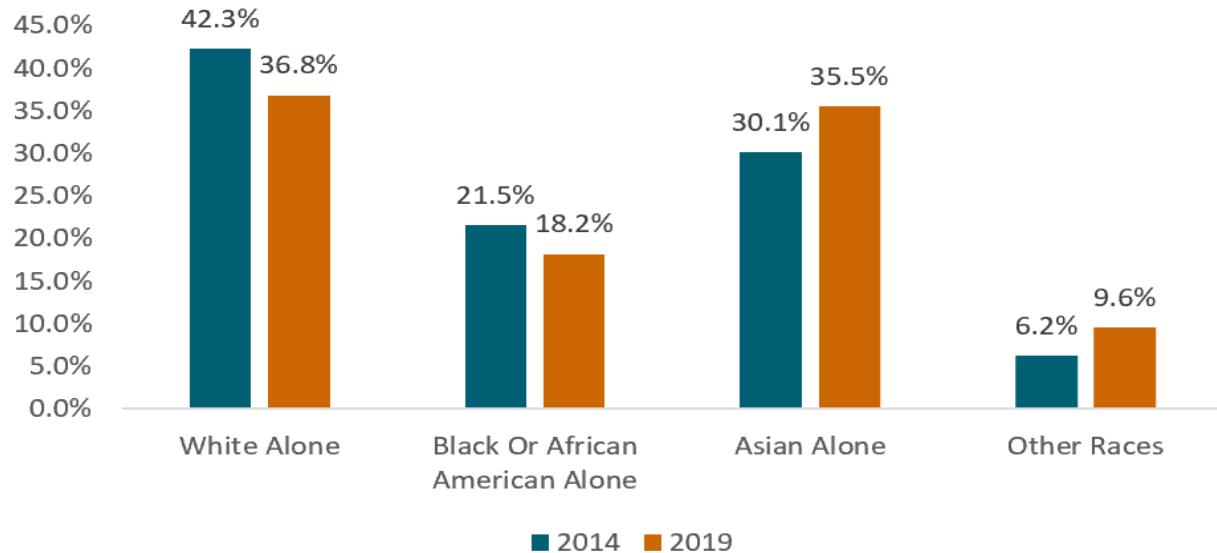


Figure: Race composition of Chinatown in 2014 and 2019.(Source: ACS 5-Year Estimates, 2014, 2019)

Chinatown is a growing neighborhood with increasing population. According to the American Community Survey (ACS) 2015 - 2019 (5-Year Estimate), population in Chinatown grew by 18.4% from 2014 to 2019. As an Asian cultural hub, Asian population is the second race group after white alone. As the statistics shows, Chinatown has experienced 5.5% decrease in white alone population and 5.4 % increase in Asian alone population.

Age

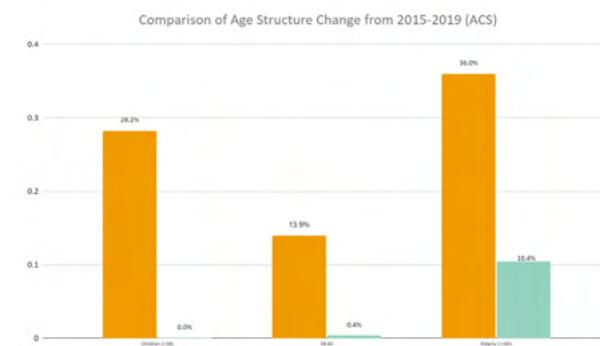


Figure: Comparison of age structure change from 2015 to 2019 (ACS data) .(Source: ACS 5-Year Estimates, 2015, 2019)

The neighborhood has experienced drastic population growth in the child and elderly age group. The 2015-2019 ACS shows that the children (<18) and the elderly (>=65) population in the site are growing much faster than the city's average and other age groups (18-64) from 2015 to 2019.

Income & Education

As the map on the next shows, there are two schools located in the study area. The Folk Art Cultural Treasures and Holy Redeemer School. Besides, more than ten other schools site surround Chinatown. However, due to the lack of high-level education institutions, the school enrollment rate for the neighborhood is relatively low compared to the city of Philadelphia as a whole.

Though with a relatively low school enrollment rate, residents in Chinatown tend to have higher median income compared with the median income for Philadelphia. According to the income chart and school enrollment chart below, the median income increased significantly by approximately 35% from 2014 to 2019, while the school enrollment rate remained almost unchanged in the neighborhood.

III. Current Conditions

Chinatown Pedestrian and Bicycle Plan



Figure: Schools within and surrounding Chinatown. (Source: OpenDataPhilly, 2014)

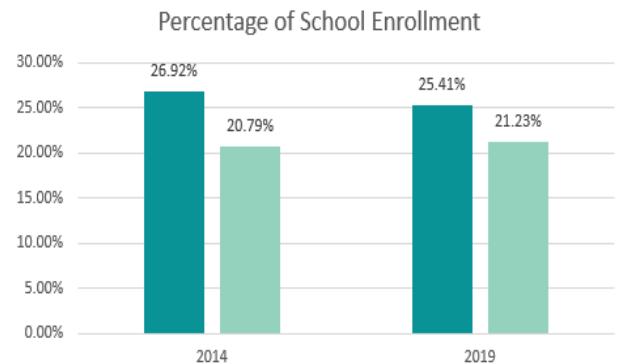


Figure: Percentage of school enrollment for Chinatown in 2014 and 2019.(Source: ACS 5-Year Estimates, 2014, 2019)

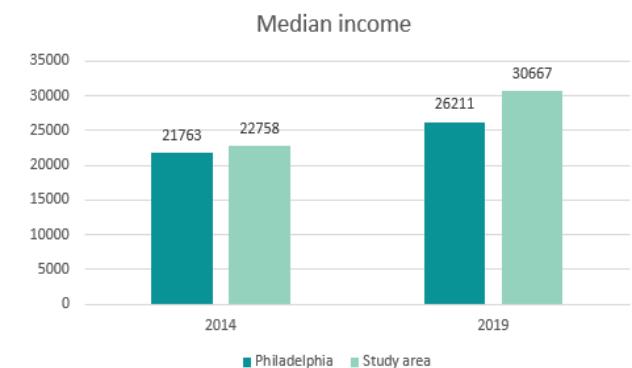


Figure: Median income for Chinatown in 2014 and 2019 .(Source: ACS 5-Year Estimates, 2014, 2019)

Pedestrian & bicycle

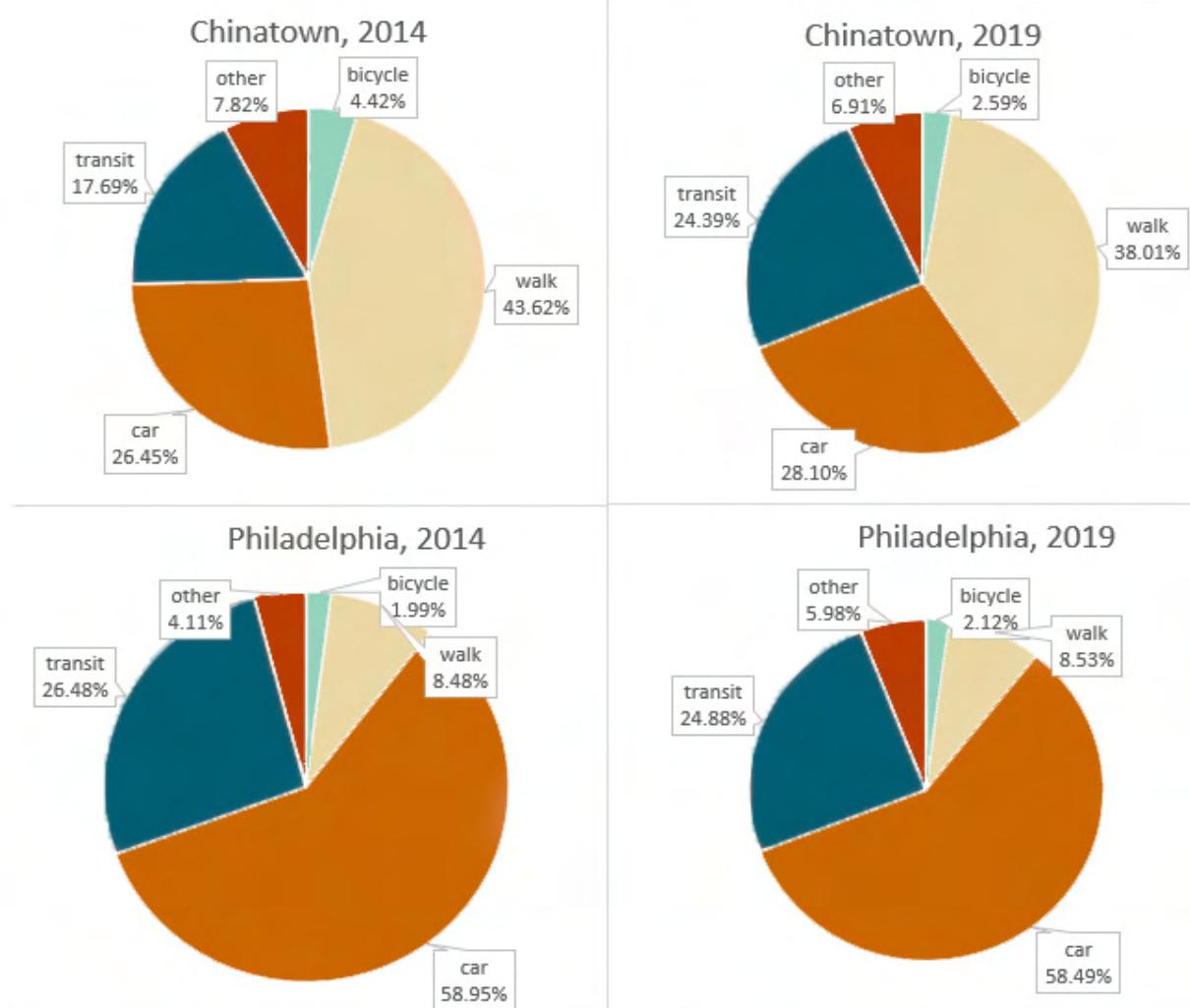


Figure: Share of commute means comparison between Chinatown and Philadelphia. (Source: ACS 5-Year Estimates, 2014, 2019)

Unlike at the city level, walking is the leading mean of commute for Chinatown. As the pie charts above show, in 2014, 43.62% people choose walking as the main commuting mode, and the rate decreased slightly to 38.01% in 2019. Such ratio decrease might result from unsafe and unpleasant walking condition. Meanwhile, only 4% people travel with bicycles in 2014 and this ratio also decreased in 2019, suggesting that Chinatown is not a very walkable region and cycling is not quite dominant.

Zoning

The Vine Street Expressway is the demarcation line of the zoning pattern of Chinatown. As the zoning map on the next page shows, the northern part of the study area tends to have a more diversified zoning pattern. That area is predominant by mixed-use commercial zoning, such as RMX3, I1, CMX2.5, etc. And the southern part of the study area's zoning code is predominant by RTA1 and CMX3. Such mixed-used zoning tends to make walking and biking more realizable for residents.

III. Current Conditions

Chinatown Pedestrian and Bicycle Plan

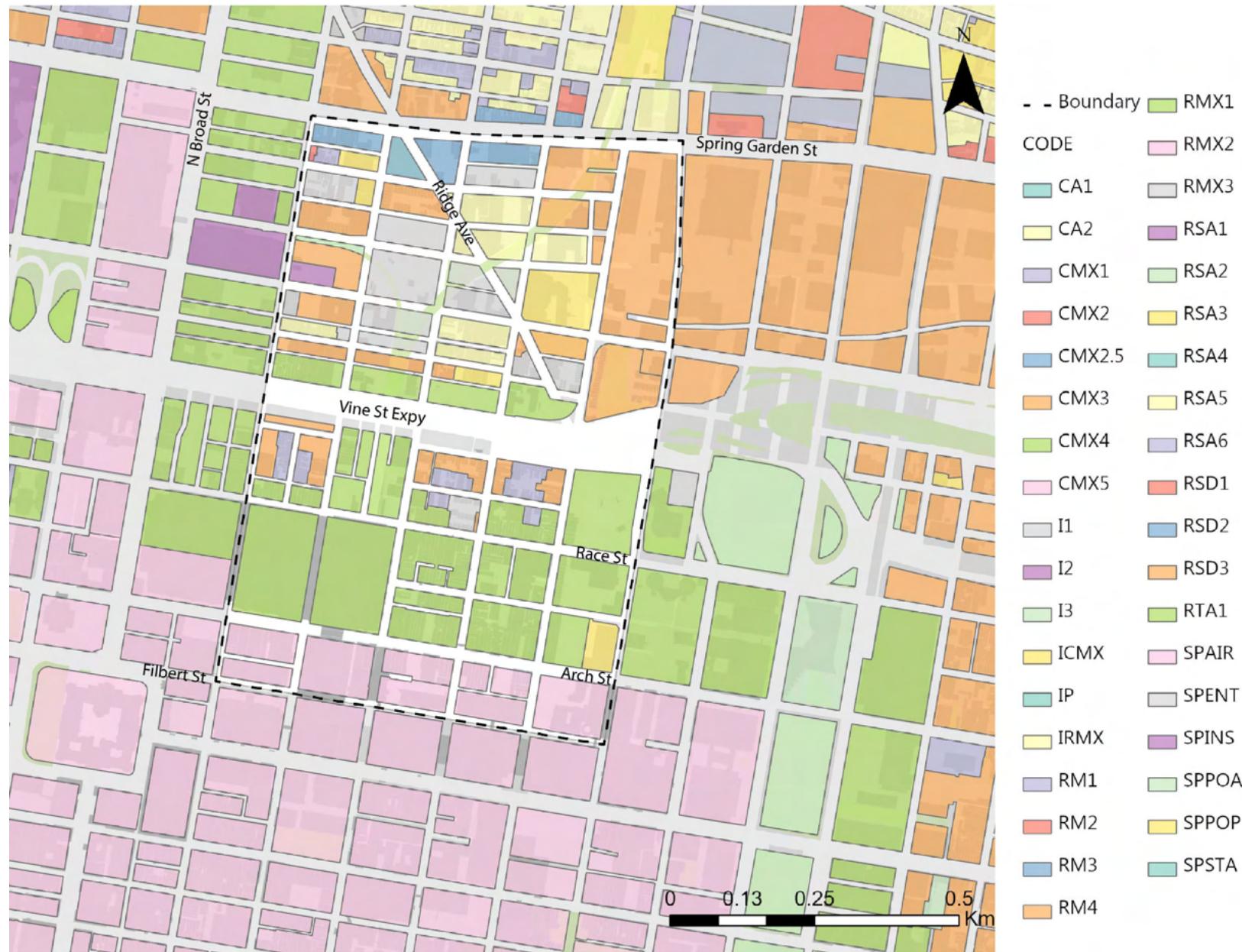


Figure: Zoning map for Chinatown. (Source: City of Philadelphia, 2022)

Built environments

Existing sidewalk, bicycle lanes, and public transit facilities

The 2012 Pedestrian and Bicycle Plan proposed to construct multiple bike lanes along the major arterial in Chinatown. Figure below shows that three bike lanes run through the study area. However, many biking facilities, such as the painted bike signs and lanes faded. With high traffic flow, bikers would feel unsafe to bike. Besides, there are only three bike rental points clustered near Arch st, and most of the major arterial have bike racks allowing travelers to park their bikes properly.



Figure: Existing bike lanes and bike rental facilities
(Source: OpenStreetMap)



Figure: Fading bike sign on 10th Street (Source: Google Map, 2020)

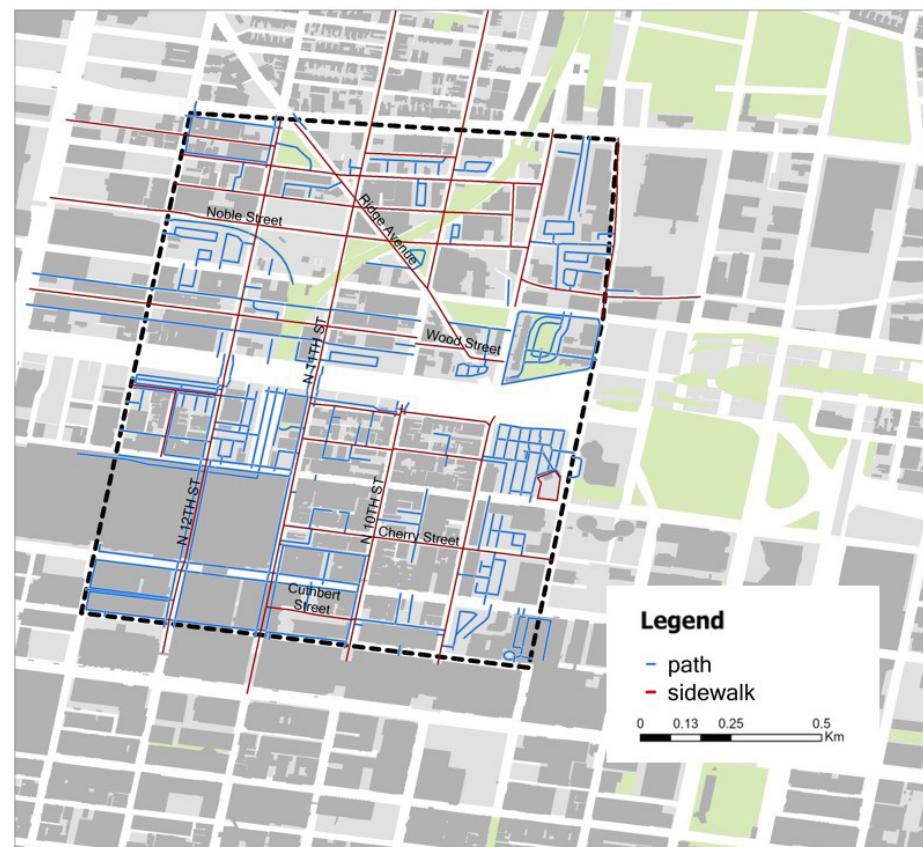


Figure: Existing path and sidewalks (Source: OpenStreetMap)

Besides bike lanes, as the Existing path and sidewalks figure below shows, nearly all roads, excepting narrow alleys, were designed with sidewalks on both sides. Such a design with a highly mixed land use might be the reason for Chinatown to have a much higher walking rate than the city of Philadelphia. However, based on the field investigations done by the authors, the condition of sidewalks sometimes makes people unwilling to walk.

III. Current Conditions

Chinatown Pedestrian and Bicycle Plan

Traffic volume



Figure: Congestions and stalls occupying sidewalks on 10th Street (Source: Authors, 2022)

Though more than 30% of residents in Chinatown commute by walking, a field study on February 15, 2022, suggests that Chinatown still experienced great automobile traffic

flows, especially on the 10th street, congestions happened due to high traffic flow and road narrowness. Moreover, 10th st serves as sharrows road, where bikes and automobiles

share the same road segment. Such high car traffic would make bikers reluctant to bike.

Besides automobiles, researchers also witnessed great pedestrian flow in the major commercial area. However, as images on the left show, the stalls along the sidewalk sometimes make it difficult for a pedestrian to pass by.

Safety

Philadelphia was identified as having the most dangerous roads in Pennsylvania. According to PennDOT's (Pennsylvania Department of Transportation) 2020 crash data, 10,136 crashes occurred in Philadelphia, with approximately 107 occurring within the study area. As the crash density map on the next page shows, Chinatown locates in an area that experienced a relatively high ratio of crashes. The majority of the collisions occurred along Vine Street, as shown by the zoomed-in map. Among the 107 crashes, seven of them were pedestrian-involved crashes and two of them were biker-involved crashes. To improve travel safety along Vine Street, PennDOT has initiated a project named Vine St. Corridor Philadelphia Implementation of Safety Measures to reduce the high frequen-

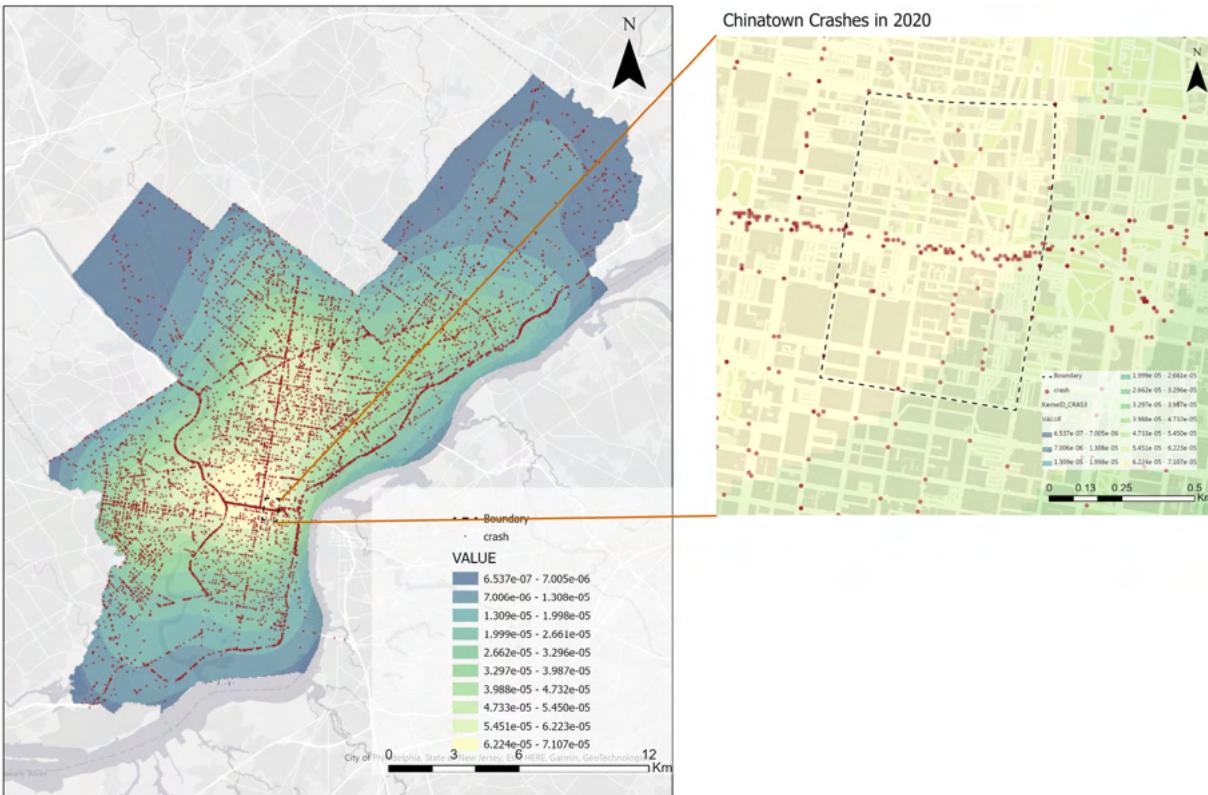


Figure: 2020 crash density map for Philadelphia and Chinatown (Source: PennDOT, 2020)

cy of angle crashes, moderate frequency of rear-end crashes, ultimately reducing fatal and injury crashes. This project aimed to be completed by 12/31/2026. Aside from that, major commercial arterials such as the 10th and Arch streets were found to have a higher number of crashes than other roads in the study area.

Chinatown is identified as a walkable neigh-

borhood due to the well-covered sidewalks and is also relatively bikeable as bike lanes were planned on the major arterials after the Pedestrian and Bicycle Plan was put into effect in 2012. However, field study in Chinatown turned out to show quantity itself is not enough to promote biking or walking, quality is also worth a highlight. The condition of sidewalks and biking infrastructures depreci-

ated over time, such as fading crosswalks or bike lanes. Such depreciation is likely to make people reluctant to walk or bike. To make biking and walking more attractive, Chinatown should seek to have more maintenance on the physical infrastructures.



Figure: Fading crossings and broken sidewalks (Source: Authors, 2022)



III. Goals

The goals of the plan are maintenance, connectivity, welcoming, and public space. The ultimate outcome will not only build a comprehensive, safe, and well-connected walking and bicycling system but also promote the significance of Chinatown as a Chinese cultural hub that attracts more visitors.

Goal #1: maintain the walking and bicycling system

Due to the weather conditions and frequent human activity, transit facilities become easily abraded, which will cause potential danger for pedestrians and cyclists, especially the elderly, disabled, and children. Maintenance on sidewalks and bike lanes will remove barriers for pedestrians and cyclists and guarantee safety for vulnerable groups.

- Repair the deteriorated infrastructure with durable materials
- Timely reports of broken signs
- Inspect the condition of current facilities

Goal #2: improve the connectivity of walking and bicycle infrastructure

Connecting the walking and bicycling network will make it easier for pedestrians and cyclists to travel. With a well-connected walking and bicycling system, people of all ages and different residential places can travel wherever they go conveniently and effective-

ly with a variety of purposes, such as work, education, entertainment, and shopping. The whole Chinatown community will hence become more integrated and connected.

- Fill the gaps of incomplete sidewalks and bike lanes
- Improve the utilization of sidewalks and bike network
- Identify shortest routes to destinations for pedestrians

Goal #3: Create an inviting and beautiful public realm

Chinatown functions as a cultural hub and a community space. With symbolic Chinese elements on public streets, Chinatown can provide a friendly and engaging atmosphere for people to explore history and culture.

- Eliminate the unsafe vibe that surrounds Chinatown

comfort community
connectivity 社區 culture/heritage/tradition
elderly 連通性 Chinatown 文化/遺產/傳統
business walkability 唐人街 safety 安全
children public engagement bikeability 基礎設施
maintenance 維護 infrastructure accessibility 可達性

- Add more cultural decorations to emphasize placemaking

Goal #4: Create more public space and programming for community use. Many public spaces in Chinatown remained unutilized for walking and biking, where people's awareness of walking and bicycling is weak. As vital public realms, streets should be improved for walkers and bicycles to enjoy. The attractiveness of walking and bicycling can also be enhanced through encouragement and education projects.

- Ensure a safe and comfortable street environment
- Reshuffled land use somewhere to create more green space
- Encourage pedestrian and bicycle-friendly practices



IV. Recommendations

RECOMMENDATION A

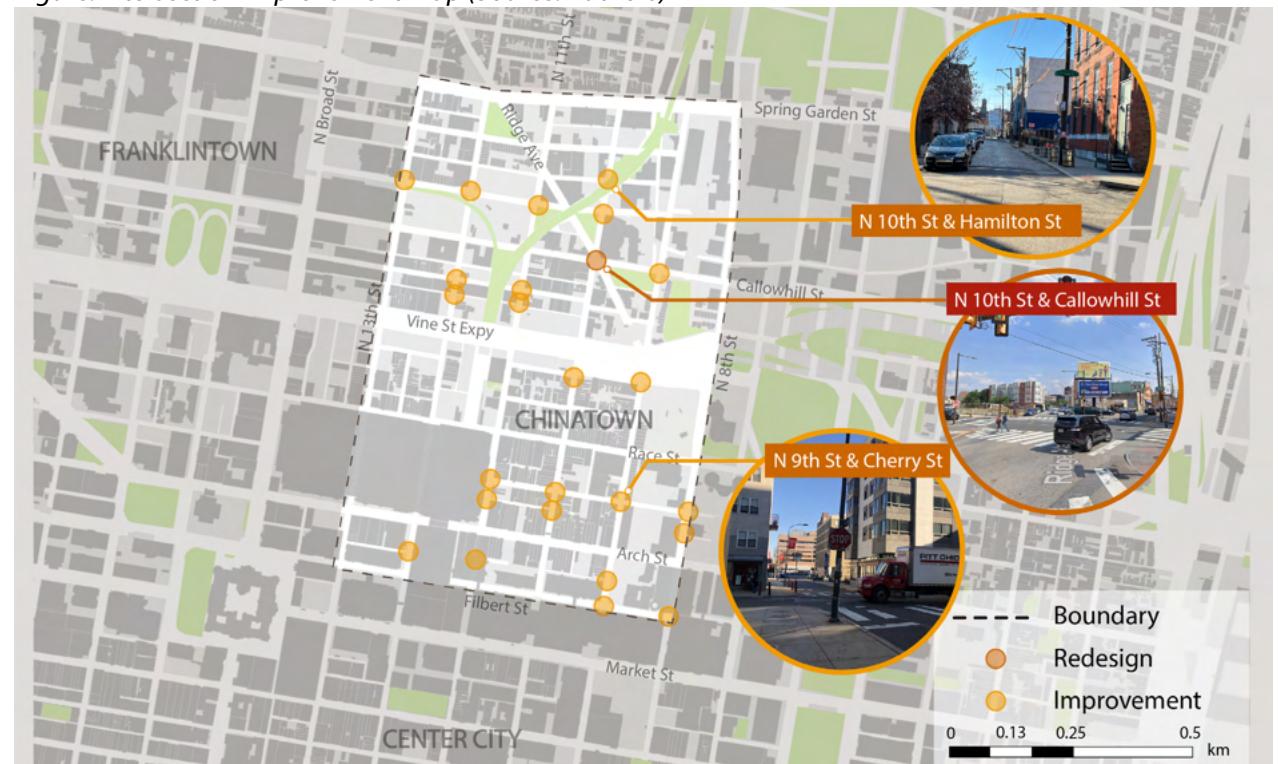
Physical Infrastructure

Chinatown is certainly one of the most walkable and transit-friendly neighborhoods in Philadelphia. However, as a busy tourist destination and dense mixed-use zone, there are barriers for pedestrians and cyclists to safely get around. This section introduces some strategies that help Chinatown's non-motorist travel network become more connected.

Intersections

Intersections exist where sidewalks and streets intersect. No matter how wide or busy the streets are, appropriate treatments such as ramps and markings should be included for users to cross safely and comfortably. While most of the Chinatown streets have delineated intersections, some locations would benefit from the provision of a few missing crosswalks and unsatisfactory treatments to ensure safer connections.

Figure: Intersection improvement map (Source: Authors)



STRATEGY A.1

Identify and improve inadequate or missing crosswalks

Pedestrians are encouraged to cross at intersections, but jaywalking is frequent in Chinatown, despite generally small block sizes. While crossing facilities such as the crossing markings, stop signs, and traffic lights are present at intersections on heavier-traffic streets, there are some without. For example, as highlighted on the map, there are crosswalks for crossing Cherry Street walking down N 9th Street, but there are no crosswalks for crossing N 9th street down Cherry street. Missing crossing facilities in intersections like this greatly reduces the effectiveness of the pedestrian network, as people will have to walk to the next intersection to cross or cross without safety measures.

Unsignalized intersections or mid-block crosswalks are candidates for improvements. While such intersections are pretty common in the study area, the ones on significant pedestrian desire lines and expected heavy pedestrian traffic areas should be prioritized. The ones identified on the map are in close proximity to customer-facing businesses and open spaces, so they are recommended to receive adequate traffic controls and crossing facilities.

- Paint Crossing Markings. They guide pedestrians on a safe path and clear boundaries.
- Install Rapid Flash Beacons or Stop Signs. The warning signs supplemented with flashing lights can alert drivers to yield where pedestrians have the right-of-way crossing a road.
- Improve Geometric Treatments. Treatments including curb extensions shorten crossing distance, increase the visibility of pedestrians, and encourage slower turning speed.

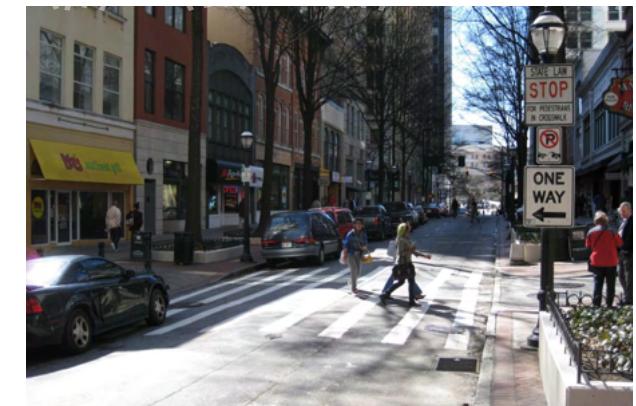


Figure: Paint crossing (Source: NACTO)



Figure: Rapid flash (Source: NACTO)



Figure: Curb extension (Source: NACTO)

STRATEGY A.2

Make it easier to cross the intersection of Ridge Ave, Callowhill St, and N 10th St

The intersection of Ridge Avenue, Callowhill Street, and North 10th Street is a confusing 6-way intersection. Both North 10th and Callowhill are one-way, and the section of Ridge north of Callowhill is two-way. Ridge and North 10th have two parking lanes, while Callowhill has one parking lane and one sharrows. Noticeably, the south segment of Ridge between Callowhill and Wood is a one-way ending segment of the diagonal street. The complexity easily makes this intersection a barrier for the pedestrian network.

Pedestrian experience at this signalized intersection would benefit greatly from redesigned crossing treatments that emphasize clarity. Besides minimizing intersection size through the addition of curb extensions, additional efforts should be considered.

- Refresh pavement. Existing crosswalks should be refreshed with high visibility striping or differentiated colors to indicate continuity of the street. It will also help pedestrians feel more oriented and comfortable crossing.
- Signal prioritization. Shorter signal cycles favor pedestrians and transit, enabling frequent and convenient crossings.
- Curb extension. In addition to shortening crossing distance, redesigned curb spaces could create more space for pedestrians and help them better orient themselves at the confusing intersection.
- Turn the south segment of Ridge into a pedestrian street. As the adjacent residential mixed-use blocks are connected to other streets, the south segment of Ridge has low traffic volume.

This intersection is also recommended to serve as an improved public space as discussed in strategy 2: participation design of street space in the Public Engagement & Education section.



Figure: Paved crossing in Arlington , VA. (Source: NACTO)

IV. Recommendations

Chinatown Pedestrian and Bicycle Plan

Path

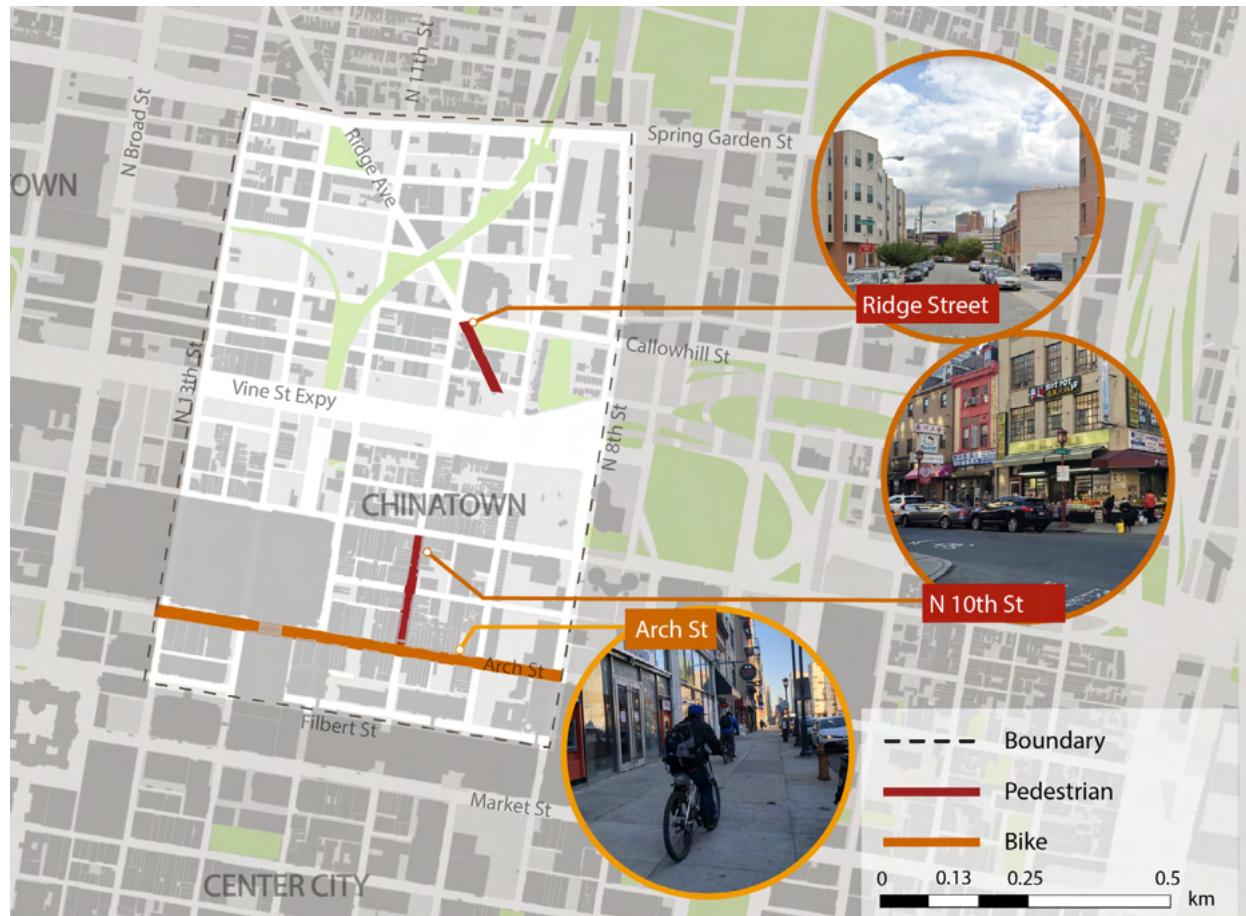


Figure: Network improvement map (Source: Authors, 2022)

Sidewalks and bike paths are designated paths for non-motorists movement and access. Our study area not only needs well-connected sidewalks and bike paths, it also needs well-designed bike and walk paths that suit the demand for the activities. The southern section of the study area is recognized for its dense pedestrian network and high foot traffic. However, people can find navigating by foot or bike difficult due to the crowdedness of streets and the unattractiveness of small alleys. The strategies focus on sidewalk design to enhance pedestrians and cyclists movement so feel safer and can navigate with ease.

STRATEGY A.3

Foot path: redesign a segment of N 10th St to support business and activity

As the gateway to Chinatown where the symbolic arch is anchored, the segment of North 10th between Arch and Race has the most activities. However, getting to places on this segment is always hard because the sidewalk is not too wide but always partially occupied either by pedestrians or street vendors. The parked cars, double-parked cars, loading-trucks, often congested car lanes, and the fire truck dispatch every now and then also add to the feeling of congestion.

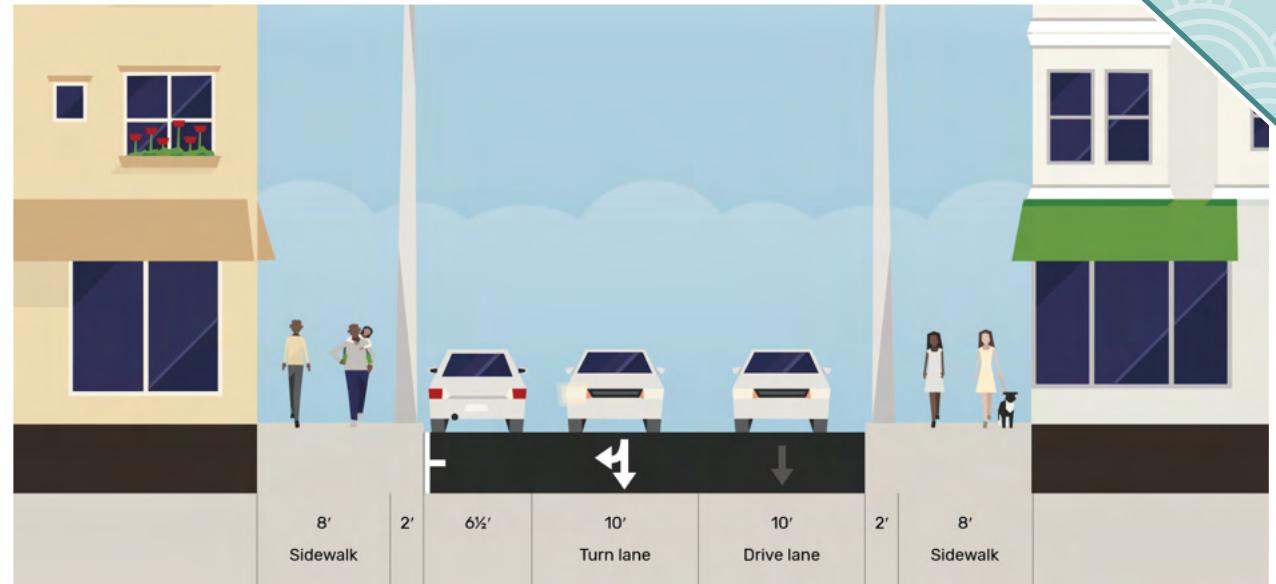


Figure: Section of current N10th St



Figure: Vendor crowded sidewalk (Source: Authors)

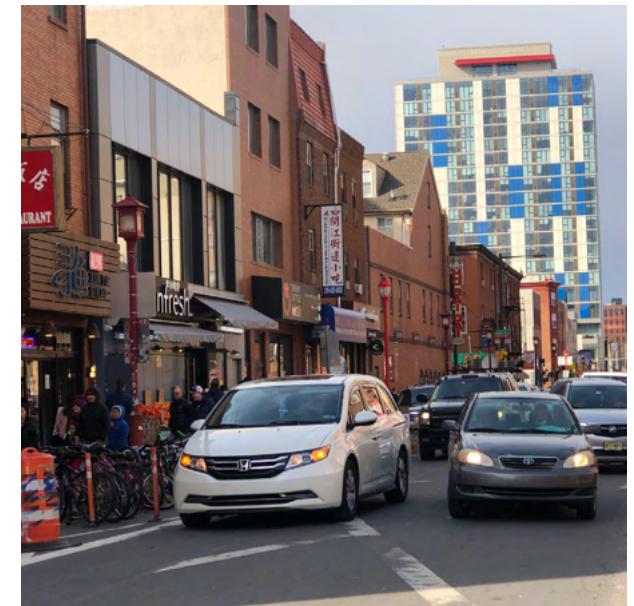


Figure: Congested 10th St (Source: Authors, 2022)

IV. Recommendations

Chinatown Pedestrian and Bicycle Plan

Scenario 1: Consider a pedestrian street

With high foot traffic and to enable pedestrians to get around better, the segment can be redesigned to be fully pedestrianized by converting the vehicle lanes into active transportation space. The original parking lane and driving lanes could be raised and paved to sidewalk level. Bikes are recommended to be ridden on a designated path with landscaped buffers. With widened space, there could even be fixed space for outdoor entertainment and activities such as outdoor dining and benches.

To alarm drivers and prevent cars from driving onto the pedestrianized street, there will be automatic retractable bollards installed where the pedestrianized streets end on Arch and Race. With the fire station on the northeast corner of Cherry and North 10th as well as numerous grocery stores and restaurants, it is worth noting here that the pedestrianized street should still support the normal operation of emergency vehicles such as fire trucks and ambulances. It will also permit necessary loading activities of businesses and retailers during predetermined times of the day. The bollards will be retracted to allow permitted vehicles to occupy the bike



Figure: Pedestrian street in Amsterdam (Source: Mcallister, 2019)

Case study: Kalverstraat, Amsterdam

Kalverstraat is a busy shopping street in Amsterdam. It is located in a “pedestrian zone” where motorized traffic is restricted or prohibited in certain areas, and more spaces are allocated to pavements and pedestrian areas. This allows visitors to walk on the street freely without interruption from motorized vehi-

cles. Pedestrians, especially those needing wheelchair assistance, enjoy a more pleasant experience as they are given more room in the busy area.

Scenario 2: Use a traffic calming treatments

While turning the segment into a pedestrian-only street is a visionary initiative, there are also options that are more operable in the shorter term. An easier-to-implement strategy is to introduce traffic calming measures to slow down traffic speed, discourage driving and provide more space for social activities. While the sidewalk could be kept the same width, the existing parking lane could be space for parklets - small, fast-to-install platforms on parking spots for residents and visitors to shop, eat, drink, and hang out. The driving lane would be reduced to one to leave room for a one-direction bike lane.

A step further would be to blur the lines between spaces for walking and vehicles to allow for more space and raise drivers' attention as there will be more interactions between street users. This can be done by raising the level of driving lanes to the sidewalk and use different pavements or colors instead to delineate space. This could also make the street fully wheelchair accessible.

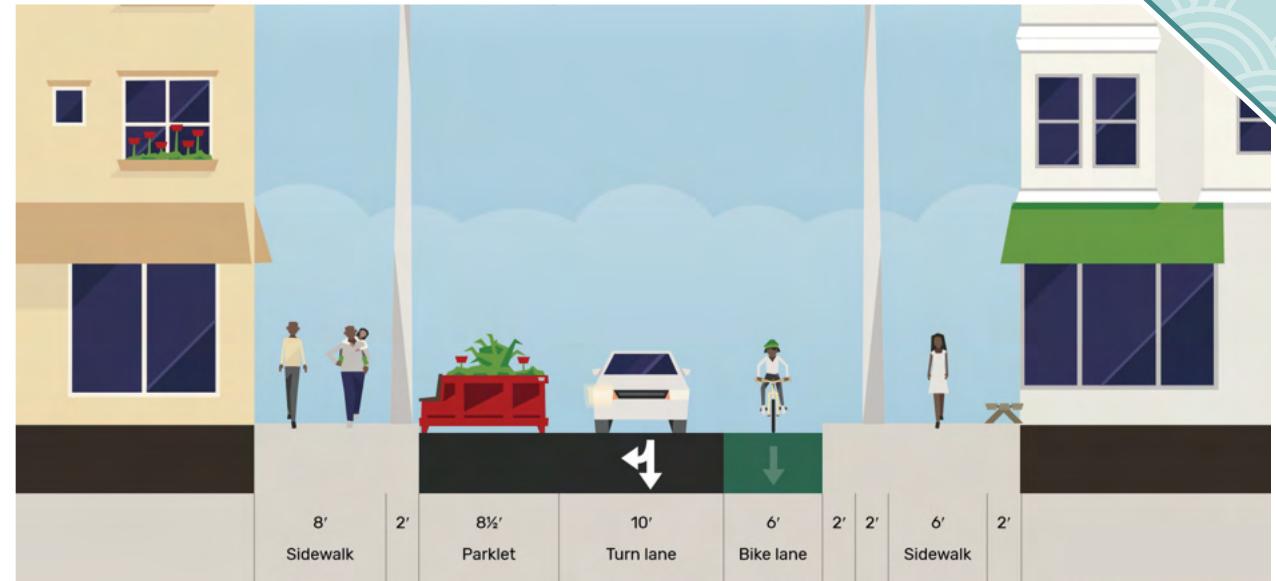


Figure: Section of proposed N10th St

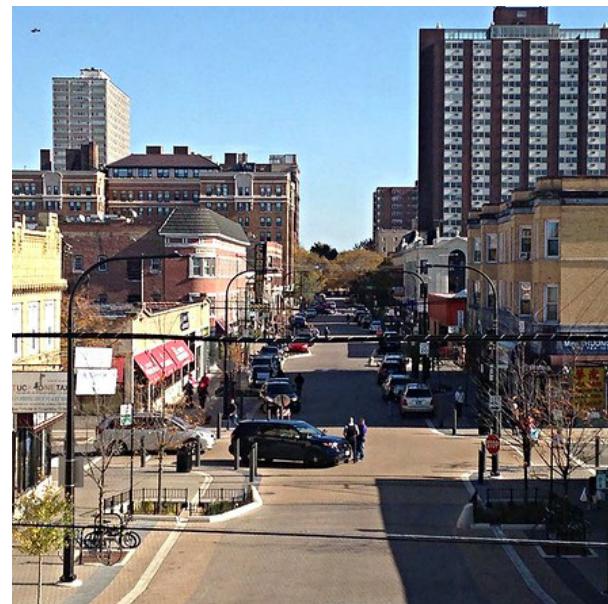


Figure: Shared street in Chicago, IL (Greenfield, 2016)

Chicago welcomed its first shared street that is a part of its Southeast Asian retail strip in Argyle. The \$4.5 million makeovers of a three-block stretch of Argyle, located between Broadway and Sheridan, raised the street up to sidewalk level, eliminated the curbs, delineated different uses of the right of way with various colors of pavers and street furniture. Additional to the planters and parking to slow down traffic, the speed limit has been lowered to 20 mph. The project aims to celebrate Argyle Street's cultural history while modernizing the strip with a forward-thinking design.

STRATEGY A.4**Foot path: path Makeovers**

While there are sidewalks serving lots of pedestrians, there are paths and sidewalks that are not widely used by pedestrians. These could be smaller alleys and shortcuts through parking lots. If well-utilized, they could save users valuable time and provide unique traveling experiences. Besides travel patterns and desires, the issue is tied to attractiveness and visibility.

Underutilized paths and sidewalks mentioned above could be improved after pedestrian activity analysis in which circumstances people have been preferring wider streets to smaller shortcuts. One instance is the parking lot surrounding the Chinatown subway station. It provides opportunities for shortcuts and can make an attractive, enjoyable route, especially after more green amenities are

added, as addressed in the initiatives in the Built Environment section of the plan.

STRATEGY A.5**Bike path: improve disconnected bike network on Arch St**

Arch street is a major one-way east-west street with two car lanes and two parked lanes. Currently, one of the driving lanes is serving as a westbound sharrows. To travel east, cyclists would have to turn to Race Street, but instead they often bike on the sidewalks, making it uncomfortable and unsafe for pedestrians. Arch street is also one of the more stressful streets to ride in Chinatown - having a stress level of three (four being the highest) according to a DVRPC analysis.

We recommend replacing the parking spot on the north end of the street with an east-bound bike lane. The bike lane will cover segments of Arch street between 13th Street and 8th Street in our study area, and in the long term extend beyond Chinatown. It will integrate well with the existing bicycle network and proposed N 10 Street improvement. However, we recognize that Arch Street is a high-traffic area and taking away one parked lane may receive heavy pushbacks given that cyclists could easily bike on Race Street and Market Street. Therefore, another strategy is to add better signage to guide cyclists off the sidewalk to bike on safer, designated bike facilities. The example provided shows what the sign may look like at decision points along bicycle routes.

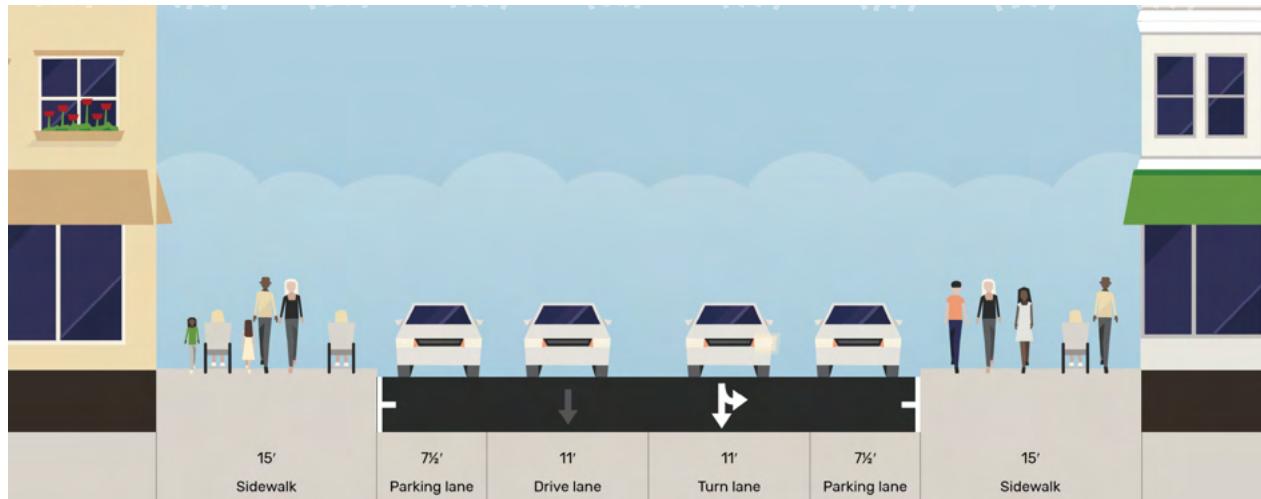


Figure: Section of current Arch St

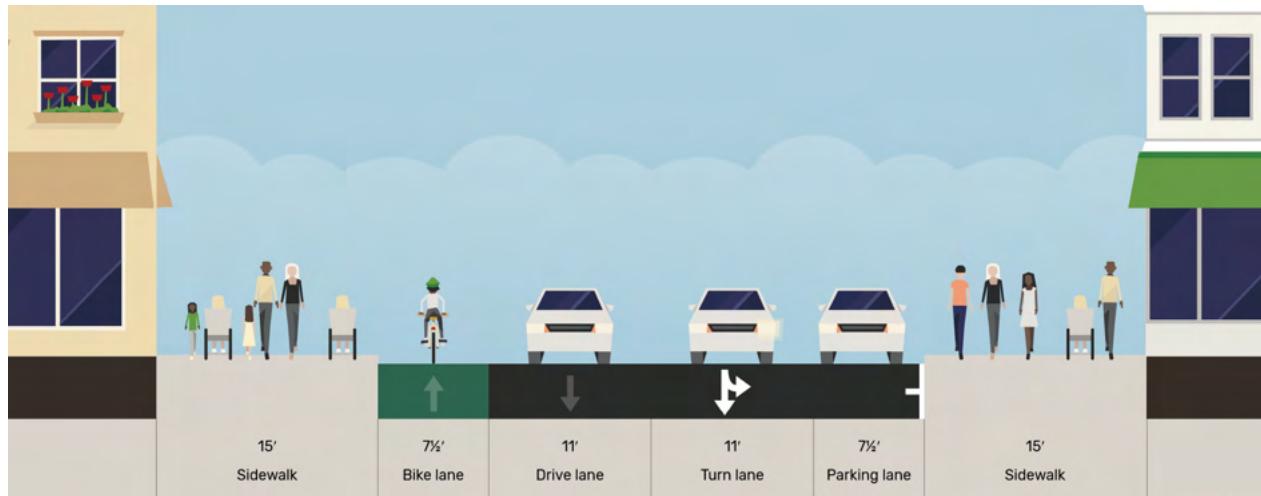


Figure: Section of proposed Arch St

RECOMMENDATION B

Built Environment

Chinatown, as a cultural diversification symbol of a city, ought to give minority groups a sense of belongings as well as attract more visitors rather than just dining and grocery shopping. The current roadway amenities and sanitation level have created an unsafe atmosphere for both residents and visitors. The gloomy and dirty alley and dark underpass all add unsafe vibes to the neighborhood.



Figure: sidewalk near intersection of Ridge Ave and Noble St and Appletree st. (Source: Authors, Google Map, 2022)

To make the neighborhood more attractive and enjoyable for all, this plan proposes to beautify the neighborhood by three approaches. First, clean-up neighborhood. Second, lighting up the neighborhood., and third ornamenting the neighborhood to give minorities a stronger sense of belonging.

STRATEGY B.1

Install trash bins to improve sanitation

The first strategy to clean up the neighborhood is to install more trash bins. According to ACS 2019, 38.01% of residents in Chinatown commute by walking compared to a city of 8.53%. Such a high pedestrianized is in high demand for trash bins. However, the number of installed bins is limited, especially in the northern part of the study area. The map below laid out all the existing bins and highlighted road segments that lack trash bins.

Trash bin installation will take place in two phases based on demands. For the first phase, trash bins will be added to busy commercial road segments. 9th st., 10th st, Arch st, and Race st. are the major target area for phase one. All these streets are highly pedestrianized and have a very high travel volume, especially the 10th street, which this plan

recommends to adjust for more pedestrian-friendly. At least two trash bins (no more than four) should be installed at each intersection of the highlighted segments.



Figure: installing trash bins at the intersection of 10th and Arch st. (Source: Google Map, 2022)

The second phase will focus on segments located in the multi-family household and industrial area in the northern part of the study area.

In the northern part of the study area, this plan proposes to add trash bins along with the selected segments. Though these segments are not located in highly commercialized areas, still have a relatively high pedestrian rate, and many garbage pieces were observed along the roads. One to two trash bins should be added to each intersection.

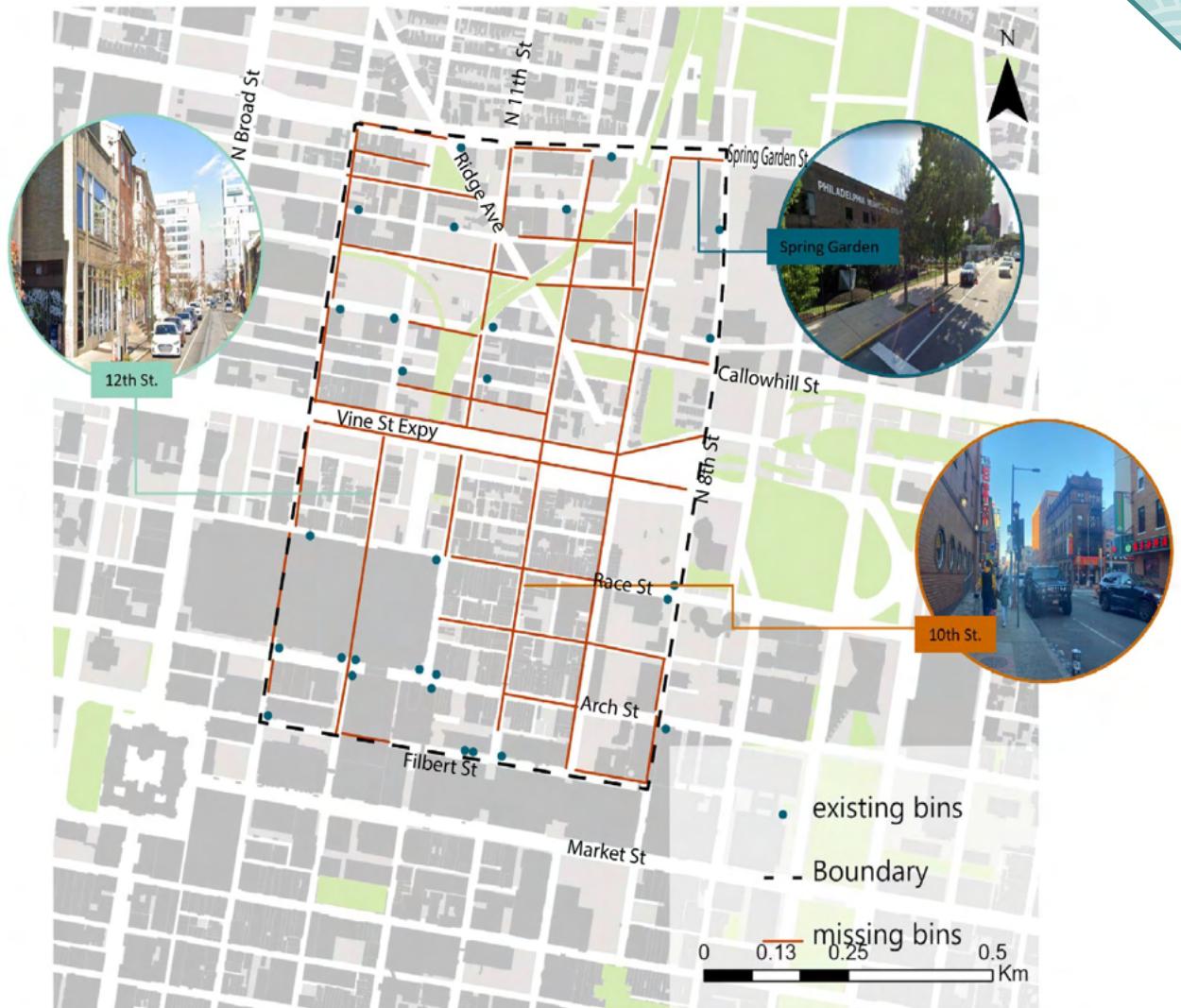


Figure: installing trash bins at the intersection of 10th and Arch st. (Source: Google Map, Authors, 2022)

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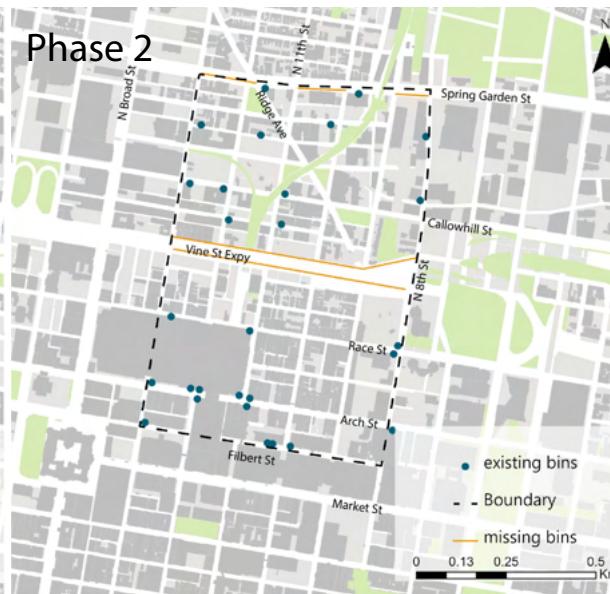
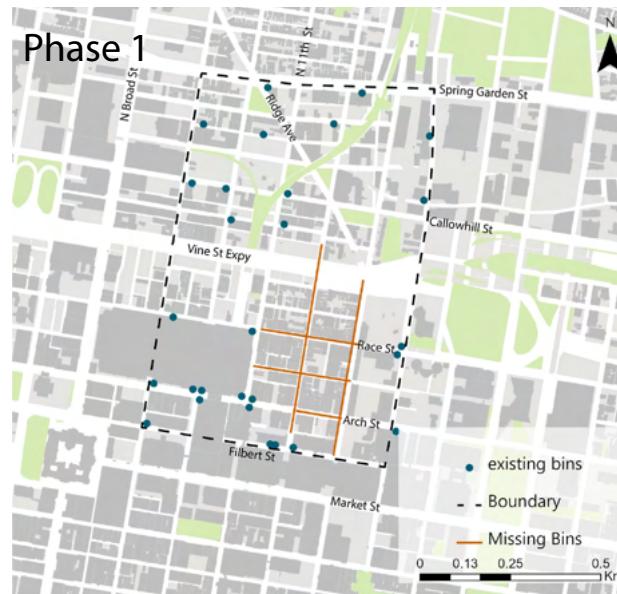


Figure: two phases of installing trash bins

STRATEGY B.2

Turn alleys into public engaging space

roads are occupied by trashes and often have ponding during rainy and snow days. The map above shows the selected alleys that have low sanitation levels and are underutilized. The Cuthbert st, Appletree st, and Cherry st. To better make use of these streets, this plan proposes to change them into public space as the Pearl Street Project initiated by the Asian Art Initiative. This project was initiated in 2013 aimed to change the Pearl st passage between the Broad to 10th street into a public space for neighborhood revitalization purposes.

Chinatown has many streets that are considerably narrow and utilized. Many of these

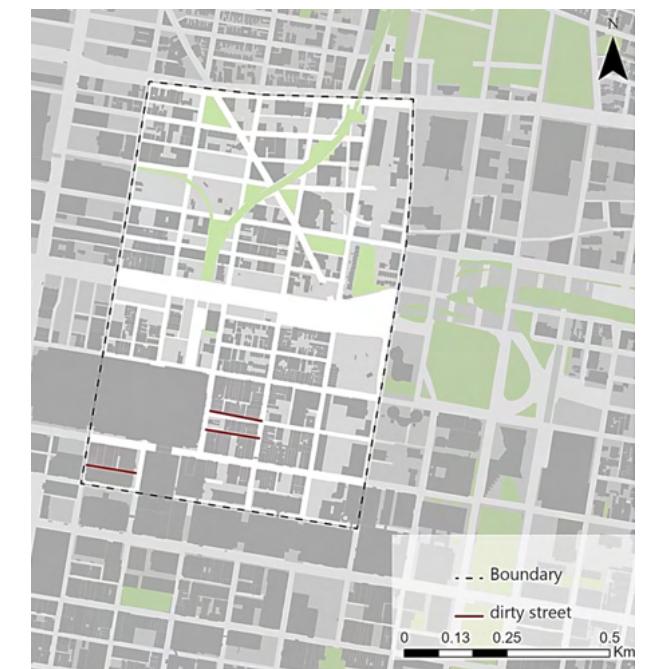


Figure: streets identified with low sanitation level.



Figure: Pearl Street Block Party (Source: Philadelphia Neighborhoods, 2021)

To add more culturally vibrant and engagement to the neighborhood, we propose to change the Cuthbert st and Appletree st into a public space like Pearl st. Local residents will be invited to re-design and re-purpose the alley into public spaces with the decoration of lighting and green infrastructure.



*Figure: Appletree st nowadays vs. future design
(Source: Google Map, Design Philadelphia, 2015)*

STRATEGY B.3

Light up the neighborhood

Missing enough lighting also adds an unsafe vibe to the neighborhood. Though most of the road segments have street lights installed, some areas, especially underpasses/tunnels in the north part of the study area lack enough lighting that makes people feel unsafe for passing by. This plan proposes to add more lights to the areas that are frequently used by pedestrians and bikers but are underserved by street lights that are



Figure: (from top left to bottom right) 8th and Vine underpass, Pearl st. tunnel, Spring Garden and 9th st, and Carton St. underpass. (Source: Google Map 2020)



Figure: map of streets that lack lights.

highlighted in the map. Having more lights in this area, can spread a safe vibe in the neighborhood, and therefore improve walkability,

bikeability, and connectivity. People who used to be reluctant on walking due to light issues can walk or bike safely and enjoyably.

STRATEGY B.4

Transfer parking/ underutilized land to public space

Compared with the road space, a large open space can provide more facilities and opportunities for outdoor activities. However, current analysis shows that there is a limited amount of open space and green space within the site particularly south of Vine Street. There are only two public spaces within the site: one is the 10th St Park on Vine St Expressway which is small and featured with Linzexu Monument and traditional painting on the ground. However, the proximity to the expressway and the surrounding heavy traffic make this space relatively inaccessible and unsafe; Another one is The Rail Park which runs through the site, providing a 4 mile continuous open space extending to the Philadelphia Museum of Art. Despite the website portraying a vibrant open space, so far only a small section of the project has been opened,

and the rest is described as promising, yet it is a wasteland in reality for now.



Figure: the 10th St Park and wasteland land under The Rail Park. (Source: Authors, 2022)

Apart from that, as the following diagram shows, the site is filled by a large number of surfacing parking and undeformed empty space occupied by waist-high weeds and garbage. The site is surprisingly devoid of any well-maintained green space. With current boring and vehicle-dominated scenery, residents' walking/biking enthusiasm is likely to be discouraged. Especially in the north

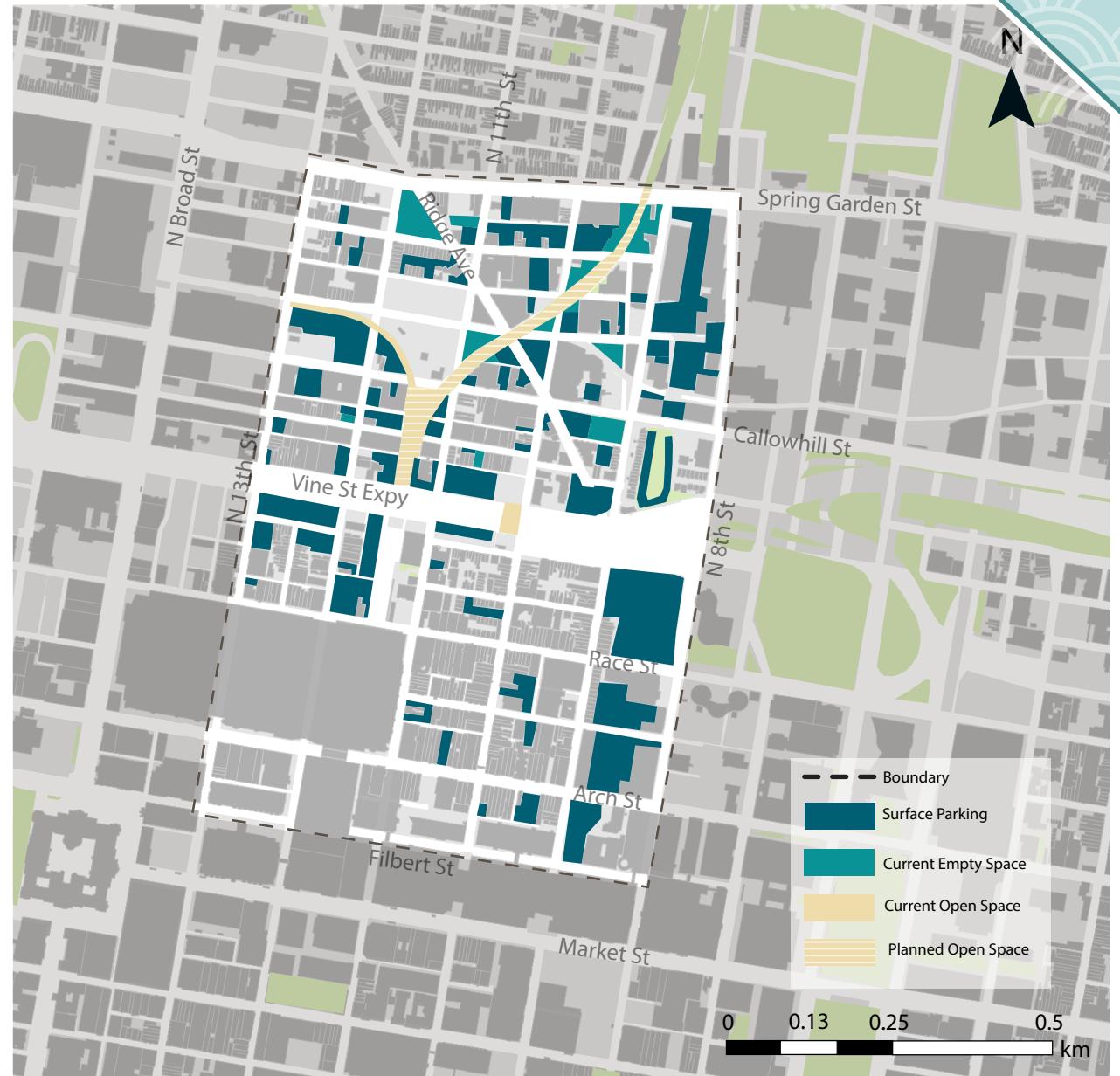


Figure: Underutilized land & open space.

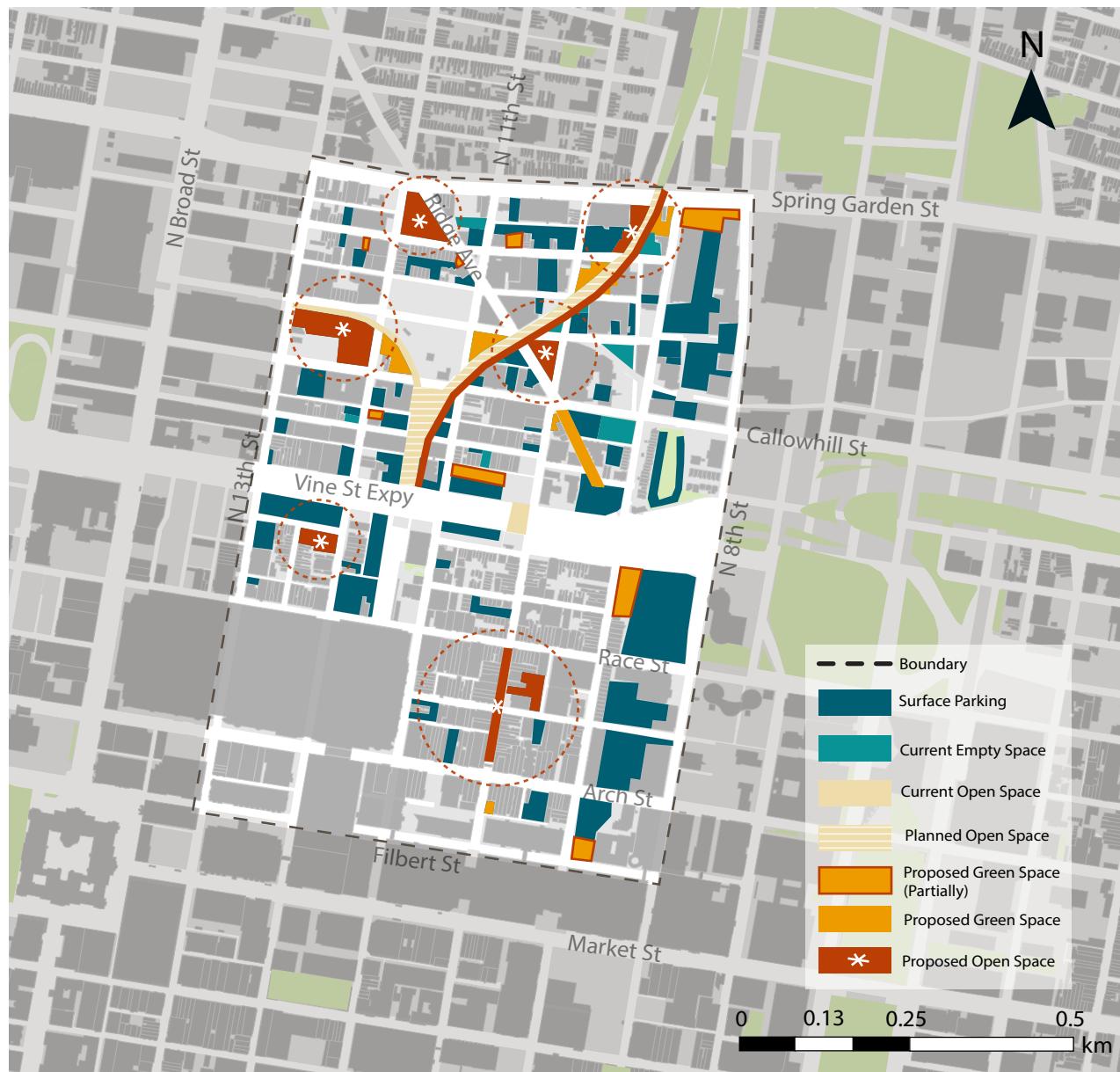


Figure: Proposal of new open space.

of Vine Street which are mainly residential areas, more outdoor space should be used for family or community purposes rather than current inactive parking.

This plan intends to transform parts of the surface parking/vacant land into active open space to stimulate all types of residents to spend more time on outdoor activities.

However, considering the size, location, and surrounding land use of the land, not every surface parking/current empty land can be transformed into green or open space in the name of promoting walkability. In spite of the low vehicle ownership rate (55%) and share of car commuting (28%) of the site (Philadelphia's average is 70% and 59%), converting the parking around the station, hospital, and event venues into open space would harm the rights of vehicle visitors dramatically.

Therefore, three types of suggestions with varying degrees of changes to the built environment are suggested in this plan.

Based on the zoning, current land use, and the average distribution of open space at the site, the following map illustrates where three different types of open space could be implemented. However, to further implement the following strategies, the council needs to deliberate and analyze the current occupan-

cy and future demand of parking to make a comprehensive selection.

Shrink Parking

A minor modification would be transforming a small portion of parking into green space, for instance reducing the parking from 100 spots to 80 spots and leaving the remaining space for green space. Park(ing) Day Project offers a number of possible scenarios for these small green spaces: public art, mini-garden, gathering space, etc.. Adding green space to the massive concrete parking areas can make the lot more accessible for the local community emotionally and functionally. Potential locations would be the parking next to Chinatown Station, Temple University School of Podiatric Medicine, and Union Transfer (Live music venue).



Figure: Projects from Park(ing) Day. (Source: Park(ing) Day, 2021)



Figure: Open space in Bryant Park, NYC. (Source: John Martoni, 2010)

Pocket Park

The second type of the proposal is to transform intact parking or underperformed land into parklets with simple greenery, recreation facilities (e.g. benches), shade and space for social interaction, which usually be placed at the corners of streets or adjacent to housing to serve more users. A good example of the charm of these mini spaces might be in NYC's Bryant Park's versatile small open space. Attractions such as flower gardens, light-weight chairs, and reading corners can turn

the parklet into a new social gathering area. The following are possible locations within the site:

- 1) Most of the underpass space along the Rail Line Park. As most of the investment of Rail Line Park focuses more on the transfer of railway and viaduct, adjacent areas that are not included in the project are currently filled with mounds of trash and waist-high weeds, especially some cave-like underpass space, which feels like a world away from the above appealing rail park. Due to its proximity to the rail park, simple greenery and average

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maintenance would be enough to reverse current scenery.

2) A section of Ridge Avenue from Callowhill St to Wood St. As elaborated in the previous proposal, this 150m section of roadway adds to the complexity of the six-way intersection, and serves a limited purpose in terms of connectivity. However, it could serve a greater community purpose by turning it into an easy-to-use linear green space with simple resting facilities.

Well equipped Park

Regarding the third type of development, available land in strategic areas can be turned into a fully equipped park, for instance, the large parking space next to Rail Line Park and Chinatown's main commercial corridors (10th St from Race St to Arch St). These parks can incorporate chairs, tables, fountains, playground, monuments, public arts, and trees to separate them from surrounding traffic. Further, a desired-paths design is also essential to encourage walking by improving connectivity and allowing for better travel efficiency. In the future, such parks are likely to serve as important focal points for community activities.

Chinatown's main commercial street (around 10th St.) has few places to sit and relax. By pedestrianizing a section of 10th St and turn-



Figure: transform paid parking lot next to N 10th St to park or plaza. (Google Map, 2022)

ing adjacent parking lots into a park (Figure), this area could become a new destination for Chinatown visitors and local businesses, promoting further active travel.

Given the increasing demand from children and the elderly in the Chinatown neighbor-

hood, one potential surface parking near the rail park can be primarily used as a children's playground since it can also accommodate the children visitors attracted by the rail park. The playground should include amenities such as mini ball fields, picnic areas, splash

pads, and other forms of playground equipment to serve a wide area. Additionally, a large vacant parcel near Ridge Avenue could be developed to provide more outdoor fitness, sitting, and chess areas for the elderly.



Figure: Example of Playground in Libs park, Nebraska. (Source: Tony Herrman, 2017)

STRATEGY B.5

Ornament N 10th St

To make walking on the N 10th street more enjoyable, and turning the segment into a public space, this plan also propose to ornament the N 10th street.

The commercial area lacks cultural signage besides the traditional gate located on the 10th street near Arch st. Adding amenities and decorations with traditional themes will add more cultural sense to the neighborhood.

Based on the pedestrianized 10th street proposal, this part of the plan recommends shaping the 10th st segment between Arch and Race st into a main passage to embody cultural sense by having more amenities.

If 10th street is fully pedestrianized, adding amenities such as benches, lights, greenness, and shelters will make the street more welcoming for pedestrians.

Moreover, to make walking more enjoyable and turn the 10th street into an attraction of tourism, this plan proposes to turn the sidewalk into the Walk of Zodiac, in the light of the Walk of Fame in Hollywood. Instead of having celebrities' names carved on the floor, zodiac characters with brief introductions will be imprinted.



Figure: gate of Chinatown on 10th St (Source: Wikipedia)

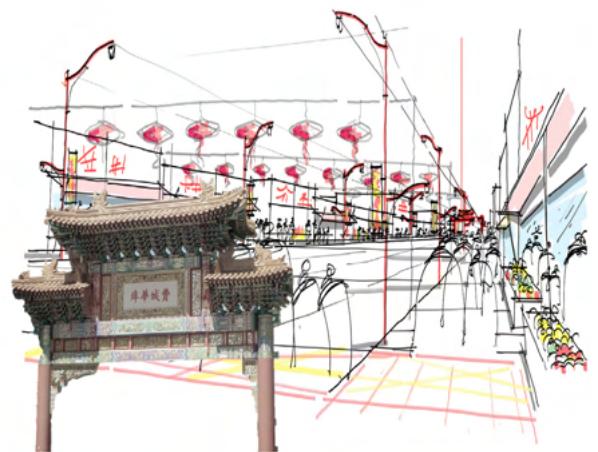


Figure: 10th St decoration example (Source: edited based on City of Edmonton's design, 2017)

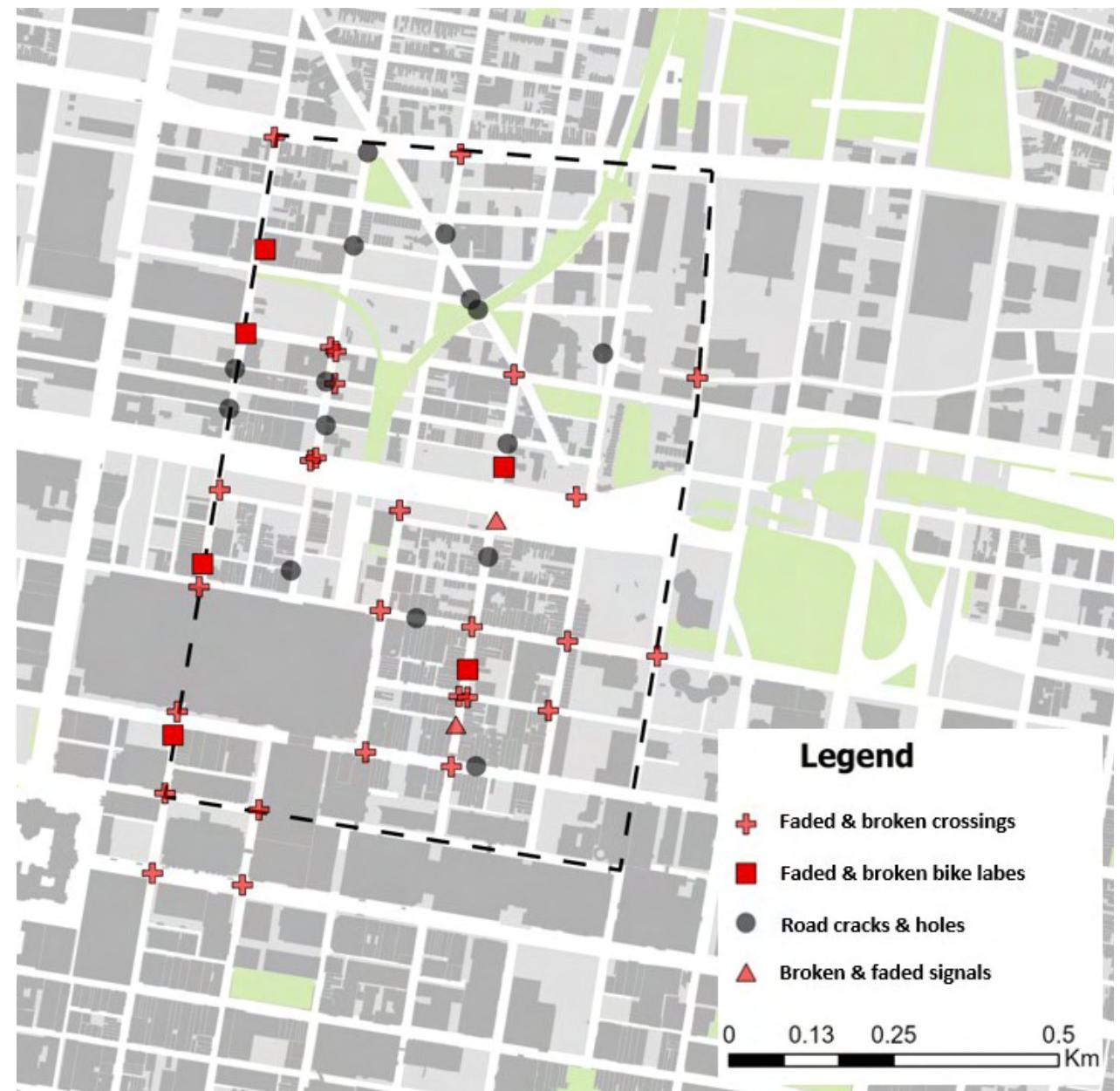
RECOMMENDATION C**Maintenance**

Figure: major maintenance problems in Chinatown

Faded crosswalks and potholes are two major problems of maintenance in Chinatown. On the north end of Vine St, potholes are the dominant problem, while on the south end of Vine St, most of the crossings and sidewalks are broken or missing. Such problems bring potential safety challenges to pedestrians, especially the elderly, children, and wheelchair users. Timely maintenance is the key to preserving strength and quality of the facilities.

The following streets should be considered for the improved maintenance practices:

- 10th St: the crosswalk was faded from heavy pedestrian and vehicular traffic, suggesting potential safety problems.
- Callowhill St: there are some holes on the road as well as faded crosswalks, while cars usually drive at a high speed on this street.
- 13th St: this street served as an important bike lane but it is difficult to identify the bicycle signs there.
- Ridge Avenue: there is six corner intersection, but the crossings were broken from frequent traffic through here. There are debris and serious cracks on the roads, which make pedestrians feel threatened when walking there.

Recommended maintenance practices

It is important to check, evaluate, respond and repair bike and pedestrian facilities to ensure safety and walkability at all times. Practices should abide to these principles:

- **Quick response:** all the community members are encouraged to report a pothole or other street damage.
 - Visitors or residents can call 311 services to report incidents where people get hurt because of broken streetscapes.
 - Employees of the agency, including law enforcement, public works, highway department, should report any damaged, deteriorated, or obscured signs as soon as possible.
- **Documentation:** there should be a monthly report on the current conditions of facilities.
- **Implementation:** PCDC and its partners should come up with a more actionable plan and protocols.

Four strategies are recommended in the following. Trash and other elements should also set up similar maintenance standards to complement walk and bike experience.

STRATEGY C.1

Maintain faded and missing crosswalks

- Repaint the crossings at off-peak periods of pedestrians and cars. Afternoons at workdays are good times.
- Consider Thermoplastic (sprayed) and Pre-formed Tape as the marking materials, which have longer lifespans.



Figure: Example of faded crossings: The entrance of Chinatown on 10th Street (Source: Authors, 2022)

STRATEGY C.2

Maintain faded and missing bike lane signs

- Following similar practices as faded and missing crosswalks
- For more frequented bike lanes, highlight the lane with bright color (e.g. yellow or green).



*Figure: Example of faded bike lanes: 13th Street
(Source: Authors, 2022)*

STRATEGY C.3

Fix potholes and cracks

- Filling small cracks and holes through patching and wedging with asphalt.
- Try displacement material for large cracks as this is best for badly broken paths.
- Call 311 or fill out the online form for City of Philadelphia to report pothole or other street damage.



Figure: Example of potholes and cracks: Callowhill Street (Source: Authors, 2022)

STRATEGY C.4

Replace broken or illegible signs

- Inspect during harsh weather especially
- Keep signs clean and stable. Perform power washing to maintain their visibility.
- Replace damaged signs timely.
- Replace reflective signal heads with non-reflective ones.



Figure: Example of a broken sign at Apple Street and a reflective signal head at 10th & Vine St intersection (Source: Authors, 2022)

RECOMMENDATION D

Public Participation & Education

In addition to beautifying and protecting the built environment to encourage walking and biking, efforts can be made to change residents' perception of the street from one of the vehicles to one of life and thereby stimulating more spontaneous active travel. Public involvement in street design, installation, and maintenance is one method to encourage more interaction and engagement with the street. Besides, educating residents, particularly children and youth, about why walking and biking is healthy for individuals, cities, and climate is rather necessary to change their perception.

STRATEGY D.1

Engage local business/ residents in cleaning efforts

As discussed before, the sanitation issue around the site is disturbing and has hindered visitors and residents from walking more in Chinatown. In the short term, more trash bins and more frequent street clean-

ing by the city council can help improve the sanitation level of the neighborhood, while it is not a panacea. To keep the neighborhood clean, local authorities and residents should also participate. It can raise their awareness about protecting the community and stimulate more spontaneous action in the future.

Beautifying Chinatown

The city of Philadelphia, Department of streets has a Philadelphia More Pretty Committee that annually holds block beautification events. This plan proposes to hold similar events in the Chinatown neighborhood, named Beautifying Chinatown, which invites business owners, schools, and residents to participate in the monthly/seasonal events to compete for cleaning up their blocks. Such a project can not only keep the street segments clean but also boost local pride.

Firstly, stakeholders, especially business owners, should take up responsibility for cleaning up areas in front of their business. Chinatown Partnership, for instance, provides advocacy and education leaflets to business owners to encourage them to maintain storefront sanitation. Secondly, the city's Department of Streets can provide funds to hire part-time local residents to help to clean the street. It

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can not only make the street clean but also provide local jobs.



Figure: Clean streets campaign Flyer, NYC ((Source: Chinatown Partnership))



Figure: Local employee cleaning team in NYC Chinatown (Source: Chinatown Partnership)

Youth Clean Action

Furthermore, the involvement of children and youth is important to educate them to protect the street's cleanliness. NYC's Chinatown Youth Initiatives organized a cleaning

event and invited youth from all around the city to participate in this outdoor cleaning and learning experience. There should also be similar projects in Philadelphia to educate youth about why the street in Chinatown needs to be cleaned and how they can contribute to it.



Figure: Chinatown Beautification Day by NYC Chinese (Source: Chinatown Youth Initiatives, 2021)

STRATEGY D.2

Incorporate residents in designing process

There are many faded crossing paintings within the site as mentioned previously. An interesting alternative to repainting them

with the original design would be to work with the local community, school, and other educational institutions to redesign the special graphics and repaint them by themselves. Furthermore, not only the faded crossing, but water manhole cover, giant intersection, and inanimate street can all be the potential venues for the local community and children to design, draw and engage with. The design theme can be local culture-related pattern, for example, China's traditional pattern.

Confusing intersection design

The 6-direction confusing intersection would be a good start adding the land use change around it as mentioned before. The north parcel and the south section of Ridge Ave will be transferred to green space as mentioned before. Besides, the sidewalk curb can be easily extended by interesting painting without higher construction time and money cost, which can reduce the pedestrian crossing distances as well as make this intersection more inviting and less confusing. From the drivers' perspective, the extension is away from the roadway, so it will not impact current traffic routes but is likely to draw their attention to slow the speed down.



*Figure: Curb extension design in Kansas City, MO
(Source: KCToday, 2022)*

An engagement workshop inviting children and local artists to design the traditional Asian pattern on the intersection. This design will not only improve walkability and bike-ability physically, but will also build a connection between the street and its residents and encourage people to spend more time on the street.

Manhole cover

The manhole cover is another element that can be imaged and painted by local residents. Compared with intersection and street design, it's much easier and smaller for children or non-artist to paint on. Japan's colorful manhole covers have become a tourist attraction and the city's identity. However, considering such elaborate works will cost \$900 per cover, this plan proposes an easy version that

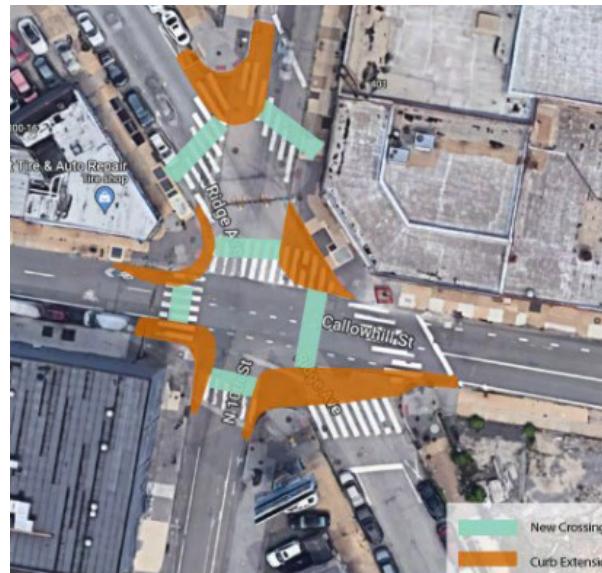


Figure: Illustration of curb extension design in 6-direction intersection

all manhole covers keep the same pattern while the painting will vary by local residents' design. It can also be implemented throughout the city. The competition for the design can also be implemented in the future in order to encourage more participation and, as a result, more attention and activities on the street surface.



Figure: The artist is painting on Philadelphia's man-hole cover (Source: Schmalzbach, 2018)

STRATEGY D.3

Support safe routes for children to school & public space

Stimulating children and youth to walk and bike more is important for developing a walkable neighborhood. For their daily trip, travel to and from school represents a large portion, so making active travel a part of their daily routines will have a significant impact on their perception of walking and biking.

There are two schools and several educational institutions within or surrounding the neighborhood while all located north of the

IV. Recommendations

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Vine St Expressway, therefore everyday the children must cross the highway to get to schools and home. It might explain why only a few from-school-to-home walking is observed in the site and all closely accompanied by parents , which is different from the pattern in the university city where a group of students always walk together. Considering the growing number of children in the neighborhood as well as the minority racial group here, Chinatown children's walking/biking route to school and open space deserve additional focus.

Philadelphia has implemented some nationwide education initiatives, such as Safety Route to School and Bike to School, while the focus of Chinatown students is limited. The Chinatown Connection Parade in 2016 is a good start, but more efforts are needed to make things happen.



Figure: after school walking observed in the site

Chinatown Connection program

One proposal is to continue the Chinatown Connection program every year to promote a safe walking route to enable children to reach schools and public space, as well as inviting residents to come together to celebrate the streets and spaces of the neighborhood. The potential parade, safety workshop, open sidewalk festival can draw attention from students, parents, drivers and decision makers to the street. Aside from one-day celebration, more efforts should be put on making safe routes happen, for example monitoring the walk/bike to school rate and pedestrian incident, and continuously improving what affects people walking/biking.

Walking/biking school bus

The walking/biking school bus refers to a group of children walking/biking to school with one or more adults. Under adult super-

vision, several families or the school should pick a place for children to meet up, and then go to school together. The purpose is to appease parents concerned about the safety and reluctant to let their children walk/bike to school, thereby encouraging the kids' active mode travel. It's a long-running national project and now needs to be implemented in the Chinatown neighborhood to educate and reduce the kids' dependence on private vehicles in this walkable city center.



Figure: walking school bus in Apex, NC and Chester, VT (walkingschoolbus.org)



Figure: Chinatown Connection Parade in Philadelphia (PCDC, 2016)

V. Plan Implementation & Evaluation



V. Implementation & Evaluation

Chinatown Pedestrian and Bicycle Plan

Recommendations	Strategies	Partners	Estimated Cost	Potential Source of Funds		
				1Y	5Y	10Y
PHYSICAL INFRASTRUCTURE	Identify and improve inadequate or missing crosswalks	PCDC, OTIS, the Rail Park, TAP, PA WalkWorks	\$\$	PA WalkWorks		
	Make it easier to cross the intersection of Ridge Ave, Callowhill St, and N 10th St	PCDC, OTIS	\$\$\$	PA WalkWorks		
	Redesign a segment of N 10th Scenario 1: Use traffic calming treatments	DVRPC, Vision Zero PHL, PCDC, OTIS, PA WalkWorks	\$	CMAQ, PA Walk-Works		
	Redesign a segment of N 10th Scenario 2: Consider a pedestrian street	DVRPC, Vision Zero PHL, PCDC, OTIS, PA WalkWorks	\$\$\$	CMAQ, PA Walk-Works		
	Improve disconnected bike network on Arch St	DVRPC, Bicycle Coalitions, OTIS	\$	CMAQ, PA Walk-Works		
BUILT ENVIRONMENT	Install trash bins to improve sanitation	Dept. of Street	\$	The FY22-27 Capital Program		
	Turn alleys into engaging space	Asian Art Initiative (AAU)	\$			
	Light up the neighborhood	Dept. of Street	\$	LSA - local share account		
	Ornament N 10th St.	Dept. of Street, AAU	\$\$	Dept. of Street		
	Shrink parking space to green space	DVRPC, Philadelphia Parking Authorities, PHS	\$	ASEZ		
	Adapt small lots to pocket park	DVRPC, Philadelphia Parking Authorities, PHS	\$\$	ASEZ		
	Transform large lots to well-facilitated park	DVRPC, Philadelphia Parking Authorities	\$\$\$			

Recommendations	Strategies	Partners	Estimated Potential source of funds		1Y	5Y	10Y
			Cost	Source			
MAINTENANCE	Maintain crossings and bike lanes	PCDC, OTIS, community organizations, 311 services	\$	Dept. of Street			
	Fix potholes and cracks on the road	PCDC, OTIS, community organizations, 311 services	\$	Dept. of Street			
	Ensure all traffic signals are in working order	PCDC, OTIS, community organizations, 311 services	\$\$	Dept. of Street			
PUBLIC PARTICIPATION & EDUCATION	Engage local businesses/youth in maintenance efforts	Dept. of Street, Mayor's Office of Public Engagement	\$\$	ASEZ			
	Incorporate residents to design the confusing intersection	AAU, Mayor's Office of Public Engagement, KABOOM	\$	ASEZ, Capital Improvement Program			
	Initiate manhole cover design competition	PCDC, Philadelphia Office of Art and Culture, Philadelphia Youth Network	\$	National Endowment for the Arts			
	Initiate annual event to support safe route for children	PCDC, Asian Americans United	\$\$	TAP			
	Walking/biking school bus by inviting more parents and school	OTIS, PCDC, Safe Routes to School	\$	TAP, PennDOT Discretionary Multimodal Transportation Funding (MTF), Toolbox for Education Grant			
			Leading Partner for all: PCDC	Funding Source for all: ASEZ Federal Transit Administration PennDOT U.S. Dept. of Health and Human Services The City's capital program Property owners and businesses			

Priority and Timeframe

The process for prioritization is based on a preliminary assessment of the importance of the present concerns identified. Recommendations are categorized into three categories: "High," "Medium," and "Low." Timeframe signifies the estimated time needed to complete the project. Philadelphia Chinatown Development Corporation (PCDC) should continue to refine and update project priorities and timeframe based on stakeholder feedback and any suggestions from the planning authorities.

Partners and Funding Sources

Partnership and funding can come from a variety of sources including city capital programs, federal programs, and special local programs.

- [The Bicycle Coalition](#) have programs and resources on biking in Philadelphia and reporting any issues with biking in the city.
- [The Neighborhood Slow Zones](#) with Vision Zero PHL take applications to work with neighbors in implementing traffic calming strategies.
- [The WalkWorks program](#) with Philadel-

phia Department of Health provides both funding and technical assistance to plans that establish safe, accessible, and active routes connecting everyday destinations.

- [City of Philadelphia](#) has programs such as American Street Empowerment Zone (ASEZ) that provide funding for beautification projects. Mayor Jim Kenney proposed continued investments in better and safer streets with [capital budgets](#).
- [DVRPC's Competitive Congestion Mitigation and Air Quality Improvement Program \(CMAQ\)](#) seeks to fund transportation projects that will improve air quality and reduce traffic congestion in the DVRPC Region.
- [Transportation Alternatives Program \(TAP\)](#) provides funding for a variety of projects described as transportation alternatives, including pedestrian and bicycle facilities and community improvement activities.

Evaluation

The Chinatown Bike and Pedestrian Plan outlines a path forward to improve the bicycle and pedestrian facilities and promote an active transportation environment. PCDC should carefully evaluate the time, cost, and impact in both quantitative and qualitative means with the community and its partners. It should also consider a systematic data collection mechanisms to support evaluation needs.

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